

WHAT IS CLAIMED IS:

1. An electronic circuit having a plurality of unit circuits, the electronic circuit comprising first power source lines, each of the plurality of unit circuits comprising:
  - a first transistor connected in series to an electronic element and connected to the first power source line;
  - a second transistor for controlling an electrical connection between a drain of the first transistor and a gate of the first transistor; and
  - a third transistor for controlling an electrical connection between the first transistor and a current source outputting a data current for setting an electrical connection state of the first transistor,

wherein at least for part of the time period in which the third transistor is in an on state, the first power source line is electrically disconnected from a driving potential, and

wherein at least for part of the time period in which the third transistor is in an off state, a current corresponding to the electrical connection state of the first transistor set by the data current flows between the first power source line and the electronic element.
2. An electronic circuit having a plurality of unit circuits, the electronic circuit comprising:
  - first power source lines; and
  - control circuits for controlling potentials of the first power source lines,
  - each of the plurality of unit circuits comprising:
    - a first transistor connected in series to an electronic element and connected to the first power source line;
    - a second transistor for controlling an electrical connection between a drain of the first transistor and a gate of the first transistor; and
    - a third transistor for controlling an electrical connection between the first transistor and a current source outputting a data current for setting an electrical connection state of the first transistor,

wherein at least for part of the time period in which the third transistor is in an off state, a current corresponding to the electrical connection state of the first transistor set by the data current flows between the first power source line and the electronic element.
  3. An electrical circuit having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal and a fourth terminal, the third terminal being connected to the first control terminal, the second transistor controlling an electrical connection between the second terminal and the third terminal; and

a third transistor having a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal,

wherein the first terminal is connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits, and

wherein the electronic circuit comprises a plurality of control circuits, each setting the potential of the first power source line to a plurality of potentials or controlling the supply and the disconnection of a driving voltage to the first power source line.

4. An electrical circuit having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal and a fourth terminal, the third terminal being connected to the first control terminal, the second transistor controlling an electrical connection between the second terminal and the third terminal;

a third transistor having a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal; and

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal,

wherein the first terminal is connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits, and

wherein the electronic circuit comprises a plurality of control circuits, each setting the potential of the first power source line to a plurality of potentials or controlling the supply and the disconnection of a driving voltage to the first power source line.

5. An electrical circuit having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal and a fourth terminal, the third terminal being connected to the first control terminal, the second transistor controlling an electrical connection between the second terminal and the third terminal;

a third transistor having a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal; and

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal,

wherein the first terminal is connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits, and

wherein the eighth terminal is connected to a second power source line, which is held at a predetermined potential, together with the eighth terminals of other unit circuits of the plurality of unit circuits, and

wherein the electronic circuit comprises a plurality of control circuits, each setting the potential of the first power source line to a plurality of potentials or controlling the supply and the disconnection of a driving voltage to the first power source line.

6. An electronic circuit according to Claim 1,

wherein transistors included in each of the unit circuits includes only the first transistor, the second transistor, and the third transistor.

7. An electronic circuit according to Claim 3,

wherein an electronic element is connected to the second terminal.

8. An electronic circuit according to Claim 1,

wherein the electronic element is a current-driven element.

9. An electronic circuit according to Claim 2,

wherein each of the control circuits is a fourth transistor having a ninth terminal and a tenth terminal, and

wherein the ninth terminal is connected to the driving voltage, and the tenth terminal is connected to the first power source line.

10. A method of driving an electronic circuit having a plurality of unit circuits, the electronic circuit comprising first power source lines,

each of the plurality of unit circuits comprising:

a first transistor connected in series to an electronic element and connected to the first power source line;

a second transistor for controlling an electrical connection between a drain of the first transistor and a gate of the first transistor; and

a third transistor for controlling an electrical connection between the first transistor and a current source outputting a data current for setting an electrical connection state of the first transistor,

the method comprising:

a first step of switching the third transistor to an on state to supply the data current to the first transistor, thus setting the electrical connection state of the first transistor; and

a second step of switching the third transistor to an off state and making a current corresponding to the electrical connection state of the first transistor flow between the first power source line and the electronic element,

wherein at least for part of the time period in which in the first step the data current is supplied to the first transistor, the first power source line is electrically disconnected from a driving voltage, and

wherein at least for part of the time period in which the second step is performed, the driving voltage is applied to either the drain of the first transistor or the source of the first transistor through the first power source line.

11. A method of driving an electronic circuit having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal and a fourth terminal, the third terminal being connected to the first control terminal, the fourth terminal being connected to the second terminal;

a third transistor having a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal; and

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal,

the first terminal being connected to a first power source line together with the first terminals of a series of unit circuits of the plurality of unit circuits,

the method comprising:

a step of electrically disconnecting the first terminals of the series of unit circuits from a driving voltage by electrically disconnecting the first power source line from the driving voltage, causing a quantity of charge corresponding to the current level of a current flowing through the first transistor to be held in the capacitive element by switching

the third transistor of each of the series of unit circuits to an on state, and applying a voltage corresponding to the quantity of charge to the first control terminal to set an electrical connection state between the first terminal and the second terminal; and

a step of switching the third transistor to an off state and electrically connecting the first terminal of each of the series of unit circuits to the driving voltage.

12. A method of driving an electronic circuit having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal and a fourth terminal, the third terminal being connected to the first control terminal, the fourth terminal being connected to the second terminal;

a third transistor having a fifth terminal and a sixth terminal, the fifth terminal being connected to the first terminal; and

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal,

wherein the first terminal is connected to a first power source line together with the first terminals of a series of unit circuits of the plurality of unit circuits, and

the eighth terminal is connected to a second power source line together with the eighth terminals of the series of unit circuits of the plurality of unit circuits,

the method comprising:

a step of electrically disconnecting the first terminals of the series of unit circuits from a driving voltage by electrically disconnecting the first power source line from the driving voltage, causing a quantity of charge corresponding to the current level of a current flowing through the first transistor to be held in the capacitive element by switching the third transistor of each of the series of unit circuits to an on state, and applying a voltage corresponding to the quantity of charge to the first control terminal to set an electrical connection state between the first terminal and the second terminal; and

a step of switching the third transistor to an off state and electrically connecting the first terminal of each of the series of unit circuits to the driving voltage.

13. An electro-optical device comprising:

a plurality of scanning lines;

a plurality of data lines;

a plurality of first power source lines; and

a plurality of unit circuits,  
each of the plurality of unit circuits comprising:  
a first transistor connected in series to an electro-optical element and  
connected to the corresponding first power source line of the plurality of first power source  
lines;  
a second transistor for controlling an electrical connection between a drain of  
the first transistor and a gate of the first transistor; and  
a third transistor for controlling an electrical connection between the first  
transistor and the corresponding data line of the plurality of data lines, the third transistor  
being controlled by a scanning signal supplied through the corresponding scanning line of the  
plurality of scanning lines,  
wherein at least for part of the time period in which the third transistor is in an  
on state, the corresponding first power source line is electrically disconnected from a driving  
voltage, and a data current supplied from the corresponding data line flows through the first  
transistor to set the electrical connection state of the first transistor, and  
wherein at least for part of the time period in which the third transistor is in an  
off state, the driving voltage is applied to either the drain of the first transistor or the source of  
the first transistor, and a current corresponding to the electrical connection state of the first  
transistor set by the data current flows between the corresponding first power source line and  
the electro-optical element.

14. An electro-optical device comprising a plurality of scanning lines, a plurality  
of data lines, and a plurality of unit circuits, each of the plurality of unit circuits comprising:  
a first transistor having a first terminal, a second terminal, and a first control  
terminal;  
a second transistor having a third terminal, a fourth terminal, and a second  
control terminal, the third terminal being connected to the first control terminal;  
a third transistor having a fifth terminal, a sixth terminal, and a third control  
terminal, the fifth terminal being connected to the first terminal, the sixth terminal being  
connected to one data line of the plurality of data lines, the third control terminal being  
connected to one scanning line of the plurality of scanning lines;  
a capacitive element having a seventh terminal and an eighth terminal, the  
seventh terminal being connected to the first control terminal and the third terminal; and  
an electro-optical element connected to the second terminal,

wherein the first terminal is connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits, and

wherein the electro-optical device comprises a plurality of control circuits, each setting the potential of the first power source line to a plurality of potentials or controlling the supply and the disconnection of a driving voltage to the first power source line.

15. An electro-optical device comprising a plurality of scanning lines, a plurality of data lines, and a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal, a fourth terminal, and a second control terminal, the third terminal being connected to the first control terminal, the second transistor controlling an electrical connection between the second terminal and the fourth terminal;

a third transistor having a fifth terminal, a sixth terminal, and a third control terminal, the fifth terminal being connected to the first terminal, the sixth terminal being connected to one data line of the plurality of data lines, the third control terminal being connected to one scanning line of the plurality of scanning lines; and

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal,

wherein the first terminal is connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits, and

wherein the eighth terminal is connected to a second power source line, which is held at a predetermined potential, together with the eighth terminals of other unit circuits of the plurality of unit circuits, and

wherein the electro-optical device comprises a plurality of control circuits, each setting the potential of the first power source line to a plurality of potentials or controlling the supply and the disconnection of a driving voltage to the first power source line.

16. An electro-optical device according to Claim 13,

wherein transistors included in each of the unit circuits includes only the first transistor, the second transistor, and the third transistor.

17. An electro-optical device according to Claim 14,

wherein each of the control circuits is a fourth transistor having a ninth terminal and a tenth terminal, and

wherein the ninth terminal is connected to the driving voltage and the tenth terminal is connected to the first power source line.

18. An electro-optical device according to Claim 13,  
wherein the electro-optical element is an EL element.
19. A method of driving an electro-optical device, the electro-optical device comprising:

a plurality of scanning lines;

a plurality of data lines;

a plurality of first power source lines; and

a plurality of unit circuits,

each of the plurality of unit circuits comprising:

a first transistor connected in series to an electro-optical element and connected to the corresponding first power source line of the plurality of first power source lines;

a second transistor for controlling an electrical connection between a drain of the first transistor and a gate of the first transistor; and

a third transistor for controlling an electrical connection between the first transistor and the corresponding data line of the plurality of data lines, the third transistor being controlled by a scanning signal supplied through the corresponding scanning line of the plurality of scanning lines,

the method comprising:

a first step of, when the third transistor is in an on state and the corresponding first power source line is electrically disconnected from a driving voltage, making a data current supplied from the corresponding data line flow through the first transistor to set the electrical connection state of the first transistor; and

a second step of, when the third transistor is in an off state and the driving voltage is applied to either the drain of the first transistor or the source of the first transistor through the corresponding first power source line, making a current corresponding to the electrical connection of the first transistor set by the data current flow between the corresponding first power source line and the electro-optical element.

20. A method of driving an electro-optical device having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal, a fourth terminal, and a second control terminal, the third terminal being connected to the first control terminal, the fourth terminal being connected to the second terminal;

a third transistor having a fifth terminal, a sixth terminal, and a third control terminal, the fifth terminal being connected to the first terminal;

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal; and

an electro-optical element connected to the second terminal,

the sixth terminal being connected to one data line of a plurality of data lines, the third control terminal being connected to one scanning line of a plurality of scanning lines,

the first terminal being connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits,

the method comprising:

a step of electrically disconnecting the first terminals of a series of the unit circuits from a driving voltage by electrically disconnecting the first power source line from the driving voltage, causing a quantity of charge corresponding to the current level of a current flowing through the first transistor to be held in the capacitive element by switching the third transistor of each of the series of unit circuits to an on state, and applying a voltage corresponding to the quantity of charge to the first control terminal to set an electrical connection state between the first terminal and the second terminal; and

a step of switching the third transistor to an off state and electrically connecting the first terminal of each of the series of unit circuits to the driving voltage through the first power source line.

21. A method of driving an electro-optical device having a plurality of unit circuits, each of the plurality of unit circuits comprising:

a first transistor having a first terminal, a second terminal, and a first control terminal;

a second transistor having a third terminal, a fourth terminal, and a second control terminal, the third terminal being connected to the first control terminal, the fourth terminal being connected to the second terminal;

a third transistor having a fifth terminal, a sixth terminal, and a third control terminal, the fifth terminal being connected to the first terminal;

a capacitive element having a seventh terminal and an eighth terminal, the seventh terminal being connected to the first control terminal and the third terminal; and

an electro-optical element connected to the second terminal,

the sixth terminal being connected to one data line of a plurality of data lines,

the third control terminal being connected to one scanning line of a plurality of scanning lines,

the first terminal being connected to a first power source line together with the first terminals of other unit circuits of the plurality of unit circuits,

the eighth terminal being connected to a second power source line together with the eighth terminals of the other unit circuits of the plurality of unit circuits,

the method comprising:

a step of electrically disconnecting the first terminals of a series of the unit circuits from a driving voltage by electrically disconnecting the first power source line from the driving voltage, causing a quantity of charge corresponding to the current level of a current flowing through the first transistor to be held in the capacitive element by switching the third transistor of each of the series of unit circuits to an on state, and applying a voltage corresponding to the quantity of charge to the first control terminal to set an electrical connection state between the first terminal and the second terminal; and

a step of switching the third transistor to an off state and electrically connecting the first terminal of each of the series of unit circuits to the driving voltage through the first power source line.

22. An electronic apparatus equipped with the electronic circuit according to Claim 1.

23. An electronic apparatus equipped with the electro-optical device according to Claim 13.